

evening of that date there were some slight indications of a development off the south Atlantic coast and by the morning of the 27th there was a low center off the New Jersey coast, with pressure readings at Atlantic City and New York of 29.52 inches, while to the northward near Lake Ontario was the remainder of the northern storm that on the previous morning was over eastern Ontario. Storm warnings were issued on the afternoon of the 26th for the Atlantic coast from Savannah to Hatteras and on the morning of the 27th extended northward to Eastport. High winds occurred over the south Atlantic coast on the 27th and on the middle Atlantic and New England coasts on the 28th. By the morning of the 28th the Atlantic coast storm was central over the Canadian Maritime Provinces, with the lowest reported barometer reading 28.22 inches at Sydney, Nova Scotia. Precipitation was general from the Mississippi Valley eastward, being in the form of snow over northern and rain over southern districts.

A high area appeared on the middle Pacific coast on the 25th and on the following morning it was over the middle Plateau region. During the 48 hours following it overspread the Gulf States, causing heavy frosts at a number of points along the immediate Gulf coast, warnings of which had been previously disseminated. By the morning of the 29th it was over eastern North Carolina.

Following the passage of this high to the Gulf States on the 28th, a low pressure area developed over the Rocky Mountain region and by the following morning was central over northeastern Kansas. On the 30th its center was northeast of Lake Superior and storm warnings were ordered for the Middle Atlantic and New England coasts and high winds followed over the region from Hatteras northward. On the 31st it was over the Canadian Maritime Provinces with increased intensity. Rain from this storm was general east of the Mississippi River.

A low-pressure area passed inland over the extreme north Pacific coast during the 29th and on the last day of the month it was over Ontario, no precipitation of importance having occurred within the area of its influence.

On the last day of the month another low passed inland over the north Pacific coast and was central over Saskatchewan.

Pressure on the California coast remained almost continuously high during the last half of the month.

RIVERS AND FLOODS, DECEMBER, 1912.

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As in the preceding months of September, October, and November, fluctuations in river heights throughout the United States were small and unimportant, except in the rivers of southeastern Mississippi, viz, the Pearl and Pascagoula. Heavy local rains in the State of Mississippi caused the Pearl River to exceed the flood stage in the

lower part of its course from the 9th to the 15th and again on the 28th. The Pascagoula was near a flood stage on the 10th and at flood stage on the 28th. The loss of property was small, probably not more than \$1,000, in live stock in the lowlands of the Pascagoula.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations elected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England.....	11	34.6	+5.5	- 0.4	0.0
Middle Atlantic.....	15	39.2	+4.2	- 1.9	-0.2
South Atlantic.....	10	50.4	+3.2	+ 2.3	+0.2
Florida Peninsula ¹	9	65.3	+4.5	+ 3.6	+0.3
East Gulf.....	11	50.3	+1.2	- 6.9	-0.6
West Gulf.....	11	47.4	-1.7	-11.3	-0.9
Ohio Valley and Tennessee.....	14	37.5	+0.8	-15.0	-1.2
Lower Lakes.....	11	32.9	+3.8	-18.0	-1.5
Upper Lakes.....	13	28.0	+3.5	-18.0	-1.5
North Dakota ¹	9	17.8	+4.1	- 5.3	-0.4
Upper Mississippi Valley.....	14	31.8	+4.5	-13.9	-1.2
Missouri Valley.....	12	32.2	+5.3	- 3.2	-0.3
Northern slope.....	9	27.0	+3.3	-12.3	-1.0
Middle slope.....	6	34.5	+1.6	-15.2	-1.3
Southern slope ¹	8	38.3	-2.7	-12.3	-1.0
Southern Plateau ¹	10	37.3	-4.3	-17.2	-1.4
Middle Plateau ¹	10	24.6	-2.6	-17.5	-1.5
Northern Plateau ¹	9	30.3	+0.9	- 9.5	-0.8
North Pacific.....	7	41.8	-0.2	+ 7.4	+0.6
Middle Pacific.....	7	47.8	-0.6	- 3.5	-0.3
South Pacific.....	4	51.8	-1.1	+ 4.3	+0.4

¹ Regular Weather Bureau and selected cooperative stations.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England.....	11	4.56	125	+0.90	- 2.70
Middle Atlantic.....	15	3.47	109	+0.30	- 0.60
South Atlantic.....	11	2.88	78	-0.80	- 4.20
Florida Peninsula ¹	9	2.29	85	-0.40	+10.50
East Gulf.....	11	6.61	147	+2.10	+16.00
West Gulf.....	10	3.10	91	-0.30	- 5.80
Ohio Valley and Tennessee.....	14	3.29	97	-0.10	+ 0.70
Lower Lakes.....	10	1.90	66	-1.00	- 0.20
Upper Lakes.....	13	1.67	77	-0.50	- 1.60
North Dakota ¹	9	0.60	100	0.00	+ 1.60
Upper Mississippi Valley.....	15	1.01	56	-0.80	- 3.00
Missouri Valley.....	12	0.33	32	-0.70	- 4.10
Northern slope.....	9	0.46	53	-0.40	- 0.10
Middle slope.....	6	0.34	46	-0.40	- 0.20
Southern slope ¹	8	0.39	90	-0.10	+ 0.40
Southern Plateau ¹	9	0.28	36	-0.50	- 0.60
Middle Plateau ¹	11	0.25	24	-0.80	- 0.30
Northern Plateau ¹	9	1.21	71	-0.50	+ 2.30
North Pacific.....	7	7.05	89	-0.90	- 2.10
Middle Pacific.....	7	1.82	42	-2.50	- 6.30
South Pacific.....	4	0.16	7	-2.00	- 3.40

¹ Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departure from the normal.

Districts.	Average.	De- parture from normal.	Districts.	Average.	De- parture from normal.
New England.....	74	-2	Missouri Valley.....	65	-10
Middle Atlantic.....	74	-1	Northern slope.....	68	0
South Atlantic.....	77	-1	Middle slope.....	61	-5
Florida Peninsula.....	84	+2	Southern slope.....	68	+2
East Gulf.....	78	+1	Southern Plateau.....	57	+11
West Gulf.....	73	-1	Middle Plateau.....	66	-4
Ohio Valley and Tennessee.....	72	-4	Northern Plateau.....	76	-4
Lower Lakes.....	76	-2	North Pacific.....	89	+3
Upper Lakes.....	79	-3	Middle Pacific.....	75	-6
North Dakota.....	82	+3	South Pacific.....	58	-11
Upper Mississippi Valley.....	73	-5			

Average cloudiness and departure from the normal.

Districts.	Average.	De- parture from normal.	Districts.	Average.	De- parture from normal.
New England.....	5.8	+0.3	Missouri Valley.....	3.9	-1.3
Middle Atlantic.....	5.8	0.0	Northern slope.....	5.7	+0.5
South Atlantic.....	6.1	+1.2	Middle slope.....	3.0	-1.1
Florida Peninsula.....	4.8	+0.4	Southern slope.....	4.8	-0.2
East Gulf.....	6.8	+1.3	Southern Plateau.....	2.4	-0.8
West Gulf.....	6.2	+1.0	Middle Plateau.....	3.8	-1.0
Ohio Valley and Tennessee.....	5.8	-0.5	Northern Plateau.....	6.7	-0.1
Lower Lakes.....	7.2	-0.5	North Pacific.....	8.1	+0.3
Upper Lakes.....	7.3	0.0	Middle Pacific.....	4.5	-0.9
North Dakota.....	5.7	+0.3	South Pacific.....	2.4	-1.9
Upper Mississippi Valley.....	4.7	-1.1			

Maximum wind velocity.

Stations.	Date.	Ve- loci- ty.	Direc- tion.	Stations.	Date.	Ve- loci- ty.	Direc- tion.
Block Island, R. I....	8	55	w.	New York, N. Y....	9	60	nw.
Do.....	9	53	nw.	Do.....	12	60	nw.
Do.....	19	56	w.	Do.....	19	50	nw.
Do.....	27	53	nw.	Do.....	27	62	nw.
Do.....	28	64	nw.	Do.....	28	72	nw.
Do.....	30	53	s.	Do.....	30	57	sw.
Buffalo, N. Y.....	2	72	sw.	Norfolk, Va.....	30	58	w.
Do.....	6	70	w.	North Head, Wash..	2	50	s.
Do.....	8	66	sw.	Do.....	3	56	nw.
Do.....	9	70	sw.	Do.....	4	64	nw.
Do.....	10	68	sw.	Do.....	13	68	se.
Do.....	13	52	sw.	Do.....	15	56	se.
Do.....	19	52	w.	Do.....	17	60	se.
Do.....	22	56	sw.	Do.....	27	60	se.
Do.....	30	50	sw.	Do.....	28	62	se.
Burlington, Vt.....	10	50	s.	Do.....	29	73	s.
Canton, N. Y.....	6	62	sw.	Do.....	30	90	s.
Do.....	10	54	sw.	Do.....	31	64	s.
Cheyenne, Wyo.....	30	60	nw.	Point Reyes Light, Cal.....	3	75	nw.
Detroit, Mich.....	2	54	w.	Do.....	14	60	nw.
Duluth, Minn.....	1	50	nw.	Do.....	15	59	nw.
Do.....	5	54	nw.	Do.....	24	51	nw.
Hatteras, N. C.....	27	52	nw.	Do.....	28	50	nw.
Helena, Mont.....	31	50	sw.	Reno, Nev.....	24	50	w.
Mount Tamalpais, Cal.....	3	66	nw.	Do.....	31	51	w.
Do.....	4	65	nw.	Seattle, Wash.....	17	64	sw.
Do.....	5	51	ne.	Sheridan, Wyo.....	30	56	w.
Do.....	14	54	sw.	Southeast Farallon, Cal.....	3	56	nw.
Do.....	16	51	nw.	Do.....	4	50	nw.
Do.....	21	56	ne.	Syracuse, N. Y.....	2	50	s.
Do.....	24	52	n.	Tatoosh Island, Wash.....	3	50	sw.
Do.....	26	62	nw.	Do.....	14	62	e.
Do.....	31	54	nw.	Do.....	15	50	ne.
Mount Weather, Va.....	2	58	nw.	Do.....	17	88	s.
Do.....	12	50	nw.	Do.....	18	57	w.
Do.....	16	52	nw.	Do.....	27	60	sw.
Do.....	19	68	nw.	Do.....	28	60	w.
Do.....	27	67	nw.	Do.....	30	79	s.
Do.....	28	74	nw.	Do.....	31	75	w.
Do.....	30	69	w.	Toledo, Ohio.....	2	59	sw.
Nantucket, Mass.....	24	58	ne.	Do.....	6	52	sw.
Do.....	30	55	sw.	Do.....	10	53	sw.
New York, N. Y.....	2	58	sw.				
Do.....	8	59	nw.				